

CLAIMS

I Claim

- 1.) A process for blending polymers of different melt indices comprising the steps of
 - (i) providing a first molecularly disentangled polymer melt,
 - (ii) providing one or more subsequent polymer melts
 - (iii) transferring the first polymer melt and the subsequent polymer melts to a means for blending, and
 - (vi) blending said first polymer melt and said subsequent polymer melts, in which said polymers may be of the same or of different families, and the subsequent polymer melts can individually be molecularly disentangled or not molecularly disentangled.
- 2) The process of claim 1 in which said any of said molecularly disentangled melts have been provided by processing a polymer melt in a Tek Flow processor.
- 3.) The process of claim 1 in which said means for blending comprises a step selected from the group consisting of continuous extrusion, batch blending, and a means for molecularly disentangling polymer chains.
- 4.) The process of claim 3 in which the means for molecularly disentangling polymer chains comprises a Tek Flow processor.
- 5) The process of claim 3 in which said means for molecularly disentangling polymer chains comprises the step of subjecting the polymer to a mechanical vibration at a frequency of up to 100Hz.

6.) The process of claim 5 in which the means for molecularly disentangling the polymer chains further comprises the step of subjecting the polymer to extensional flow.

7.) The process of claim 3 in which the means for molecularly disentangling the polymer chains comprises the step of subjecting the polymer to shear.

8.) The process of claim 7 in which the means for molecularly disentangling the polymer chains further comprises the step of subjecting the polymer to extensional flow.

9.) The process of claim 1 in which said blending step takes place at a temperature that is at least 20° C below the conventional melt temperature range of the polymer.

10.) The process of claims 1, 2, 3, 4, 5, 6, 7, 8, or 9 in which any two of the polymer melts can be characterized by melt flow indices, and in which the ratio of the larger melt flow index to the smaller melt flow index is greater than 1.0.

11.) The process of claims 1, 2, 3, 4, 5, 6, 7, 8, or 9 in which any two of the polymer melts can be characterized by melt flow indices, and in which the ratio of the larger melt flow index to the smaller melt flow index is greater than 5.0.

12.) The process of claims 1, 2, 3, 4, 5, 6, 7, 8, or 9 in which any two of the polymer melts can be characterized by melt flow indices, and in which the ratio of the larger melt flow index to the smaller melt flow index is greater than 10.0.

13.) A product that comprises a blend of two or more polymers and in which at least one of the polymers is molecularly disentangled and in which two

or more of the polymers may be of the same family, or all of the polymers in the blend may be of different families.

14.) The product of claim 13 in which two or more of the polymer melts can be characterized by melt flow indices, and in which the ratio of the larger or largest melt flow index to the smaller melt flow index is greater than 1.0.

15.) The product of claim 13 in which two or more of the polymer melts can be characterized by melt flow indices, and in which the ratio of the larger or largest melt flow index to the smaller melt flow index is greater than 5.0.

16.) The product of claim 13 in which two or more of the polymer melts can be characterized by melt flow indices, and in which the ratio of the larger or largest melt flow index to the smaller melt flow index is greater than 10.0.